

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference XA2018	FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/GB2004/004896	International filing date (day/month/year) 19.11.2004	Priority date (day/month/year) 21.11.2003	
International Patent Classification (IPC) or national classification and IPC H01Q3/26, H04B17/00			
Applicant BAE SYSTEMS PLC ET AL.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 6 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (Indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 29.08.2005		Date of completion of this report 27.01.2006	
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer Van Dooren, G Telephone No. +31 70 340-2952 	

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/GB2004/004896

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1, 2, 6-8	as originally filed
3-5, 5a	received on 29.08.2005 with letter of 25.08.2005

Claims, Numbers

1-7	received on 29.08.2005 with letter of 25.08.2005
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Drawings, Sheets

1/2, 2/2	as originally filed
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- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/GB2004/004896

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-7
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-7
Industrial applicability (IA)	Yes: Claims	1-7
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Reference is made to the following documents:
 - D1: EP-A-0 938 204 (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD) 25 August 1999 (1999-08-25)
 - D2: US-A-5 357 257 (NEVIN ET AL) 18 October 1994 (1994-10-18)
 - D3: EP-A-1 161 001 (NEC CORPORATION) 5 December 2001 (2001-12-05)
 - D4: US-A-6 157 343 (ANDERSSON ET AL) 5 December 2000 (2000-12-05)
2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 does not involve an inventive step in the sense of Article 33(3) PCT.
 - 2.1 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses the preamble of this claim, namely (the references in parentheses applying to this document):
a method of calibrating an antenna and receiver system having multiple channels, each channel comprising an antenna, feed cable and associated receiver components, the method comprising the steps of:
 - (i) applying a wideband calibration signal to each of a plurality of channels, the wideband calibration signal having similar characteristics to an operational signal (102-104);
 - (ii) measuring a correlation response corresponding to said wideband calibration signal across said plurality of channels (113,114);
 - (iii) deriving an estimate of signal transfer response for each of said plurality of channels based on the correlation response (117); and
 - (iv) applying compensation factors for each of said plurality of channels derived from the estimate of signal transfer response (118).
 - 2.2 The applicant has combined claim 3 as originally filed with the independent claim 1 as originally filed, and the independent claim currently on file has a characterising portion defining a relative calibration technique, namely that step (ii) comprises

measuring the correlation response with reference to a further selected channel.
This difference causes independent claim 1 currently on file to be novel.

- 2.3 The problem to be solved by the present invention may therefore be regarded as how to establish a relative calibration from the calibration method as disclosed in D1, and, consequently, obtain a simpler calibration process.
- 2.4 The solution proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT), because to use one channel as reference, and then measuring the correlation response with reference to that channel is disclosed and identified in D4 as a relative calibration process.
3. Also when considering D2 as closest prior art, the examiner is of the opinion that independent claim 1 currently on file is not inventive (Article 33(3) PCT).
 - 3.1 Document D2, which is now considered to represent the most relevant state of the art, discloses (cf. col. 3, l. 46 - col. 7, l. 39; fig. 1) a method of calibrating from which the subject-matter of claim 1 differs in that the calibration signal is a wideband calibration signal having similar characteristics to an operational signal.
 - 3.2 The problem to be solved by the present invention may therefore be regarded as how to improve the calibration method as proposed in D2, and to calibrate as accurately as possible.
 - 3.3 The solution proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) because in D1 the problem of accurate calibration is identified, and its solution is given to be the use of a wideband signal similar to the CDMA communication spread signal used for actual communications as the calibration signal, allowing accurate measurement of delay characteristic and amplitude characteristic (§ 23,74).
4. Dependent claims 2-7 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step, see documents D1-D4 and the corresponding passages

cited in the search report:

- the additional technical features of claims 2,4-7 are further disclosed in D1; and
- the additional technical feature of claim 3 is considered obvious over the combination D1-D4, as it is disclosed in D4.

Re Item VIII

Certain observations on the international application

1. Although independent claim 1 claims a method of calibrating an antenna and receiver system, the antenna system itself is in fact **not** calibrated (Art. 6 PCT).
2. It is not clear **how** the compensation factors in claim 1, point (iv), are determined (Art. 6 PCT). Although it is recognised that the compensation factors are somehow related to the transfer characteristics, it is believed that, in order to provide compensation, an inverse or conjugate operation should be employed somewhere.
3. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
4. The embodiment of the invention shown in figure 1, and its associated description, does not fall within the scope of the claims. This inconsistency between the claims and the description leads to doubt concerning the matter for which protection is sought, thereby rendering the claims unclear, Article 6 PCT.

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